REMARKS

Status of the claims

Claims 1, 2, 5, 6, 9, 11, 12, 18-21, 24 and 29-35 are pending in the application, with claims 34 and 35 being newly added herein. Claims 18-21 and 24 are amended herein. No new matter has been added with the amendments or new claims. As such, entry thereof is respectfully requested.

Rejections under 35 U.S.C.§112, 2nd paragraph

The Examiner maintains the rejection of claims 18-21 and 24 as being unclear and indefinite for the following specific reasons.

a) Claims 18, 19 and 24 have been rejected for recitation of "DNA fragment according to claim 1." Claims 18, 19 and 24 have been amended to delete "or DNA fragment". Withdrawal of the rejection is respectfully requested.

b) Claim 20 has been rejected for recitation of "such as". Claim 20 has been amended to delete the subgenus subject matter and present that subject matter as new claims 34 and 35. No new issues or new matter considerations are believed to be raised by the presentation of new claims 34 and 35. As such, entry thereof despite the fact that an equal number of claims are not concurrently being cancelled is respectfully requested.

c) Claim 21 remains rejected as being unclear in the recited method steps. Claim 21 has been amended to clarify that the steps (i), (ii) or (iii) are performed to screen for substances having the characteristics of (a)-(c). Withdrawal of the rejection is respectfully requested.

In the Advisory Action, the Examiner maintains the rejection of claim 20 and further rejects claim 35 as being unclear. Claims 20 and 35 have been amended as suggested by the Examiner. As such, all issues under 35 U.S.C.§112, 2nd paragraph are addressed and any new issues which prevented entry of the response of August 22, 2005 have been removed. Entry and consideration of the response is therefore respectfully requested.

Rejections under 35 U.S.C.§101 and 112, 1st paragraph

The Examiner maintains the rejection of the claims under 35 U.SC. §§101 and §112, 1st paragraph for an asserted lack of utility. The Examiner notes that the invention must have a credible, specific and substantial utility. The Examiner notes that the asserted utility for the instant invention is credible and specific, but not substantial. With regard to the asserted lack of substantiality of the utility the Examiner states, "An assertion that the claimed polypeptides can be used to bind the antibodies is not substantial, since it is only for further research regarding the function of the claimed polypeptides in the cell with respect to G-CSF function."

Applicants respond, in turn, that the Examiner is legally incorrect in her position with regard to the substantiality of the utility of the invention. Section 2107.01 of the MPEP states, with regard to the requirement for a utility to be substantial that,

> A "substantial utility" defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. For example, both a therapeutic method of treating a known or newly discovered disease and an assay method for identifying compounds that themselves have a "substantial utility" define a "real world" context of use. An assay that measures the presence of a material which has a stated correlation to a predisposition to the onset of a particular disease condition would also define a "real world" context of use in identifying potential candidates for preventive measures or further monitoring. MPEP 2701.01 (emphasis added).

The present invention has a substantial utility because the specification clearly ties the invention to the treatment, diagnosis or prevention of neutropenia. The present specification clearly describes that the gene or the protein of the present invention can be used for the treatment, diagnosis or prevention of neutropenia and anaplastic anemia (see p. 48, line 18 to page 49, line 3, of the present specification). In addition, the present specification teaches a method of screening a substance that can induce production of G-CSF, with a protein of the present invention (see Claim 21, as well as page 43, line 6 to page 45, line 21 of the specification).

Further, the protein of the present invention has the fundamental characteristic that it binds to G-CSF inducing antibody produced by the hybridoma deposited as FERM BP-6103. It was known at the filing date of the present application that the antibody produced by the hybridoma FERM BP-6103 has an ability to induce G-CSF. However, antigens recognized by

the G-CSF inducing antibody had not been discovered before the filing of the instant application. As such, the mechanism by which the antibody induced G-CSF' was not known at the time of filing the present application. Under these circumstances, one skilled in the art would find it a useful and substantial utility in the identification of a protein which binds to the antibody (i.e., the protein of the present invention).

In summary, the present invention provides a new drug target for G-CSF induction. The gene or protein of the present invention can be used for the treatment, diagnosis or prevention of diseases such as neutropenia and anaplastic anemia. Further, the protein of the present invention can be used in a method for screening a substance that can induce the production of G-CSF. Such a screening method is useful for obtaining novel G-CSF inducing substances (which are not limited to G-CSF inducing antibodies) that can be used as pharmaceuticals. Preliminary to establishing such screening methods is the determination of the gene and protein of invention. Thus, the gene and protein of the invention have a substantial utility. Finally, as described in the Background Art section of the specification, the fact that G-CSF exhibits a therapeutic effect on neutropenia and anaplastic anemia was known at the time of filing of the application.

In the Advisory Action, the Examiner states that Applicants arguments above are insufficient to overcome the rejection because "the specification does not clearly provide a nexus between a change in the amount or form of the claimed polypeptide and neutropenia." Applicants disagree with this position because when the specification is fully reviewed in view of what was commonly known and accepted in the art at the time of the invention, it is seen that the application does provide a clear nexus between the claimed polypeptide and the treatment of neutropenia.

First it was well-established at the time of the invention that

1) the administration of granulocyte colony-stimulating factor (G-CSF) has a therapeutic effect on neutropenia. See page 1, line 19, through page 2, line 19.

2) G-CSF inducing antibodies have been identified. See page 2, lines 20-26 and the attached Abstract of Aoki et al., J. Leukoc. Biol., 68:757-764.

The instant invention identifies the polypeptide recognized by those antibodies. Thus, it was already known that whatever the antibodies recognized is involved with G-CSF production

production (although the identity of the protein was not determined until the invention) and it was already known that G-CSF has a therapeutic effect on neutropenia. These facts establish a clear nexus between the polypeptide of the invention and neutroprenia.

Thus, the present invention has the substantial utility of treating a known disease and an assay method for identifying compounds for treating the known disease. This is a substantial utility as explicitly defined in the MPEP, and furthermore, one skilled in the art would find that the present invention has utility. Withdrawal of the rejection is respectfully requested.

In view of the above amendment, applicant believes the pending application is in condition for allowance. If the Examiner has any questions regarding the present application she is requested to please contact the undersigned.

Dated: September 22, 2005

Respectfully submitted,

By _____

MaryAnne Armstrong, Ph.D.
Registration No.: 40,069
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Rd
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

Attachment: Aoki et al., J. Leukoc. Biol., 68:757-764

1: J Leukoc Biol. 2000 Nov;68(5):757-64.

Selective stimulation of G-CSF gene expression in macrophages by a stimulatory monoclonal antibody as detected by a luciferase reporter gene assay.

Aoki Y, Sha S, Mukai H, Nishi Y.

Laboratory of Life Science & Biomolecular Engineering, Japan Tobacco Inc., Yokohama, Kanagawa, Japan.

We have identified a stimulatory monoclonal antibody (mAb) from autoimmune mice that selectively stimulates granulocyte colony-stimulating factor (G-CSF) gene expression in a mouse macrophage cell line. The induction was observed not only in the cell line, but also in normal peritoneal macrophages. This mAb bound to the monocyte/macrophage cell lines and pre-B leukemia cell lines, but also in normal peritoneal macrophages, whereas it did not bind to normal T and B cells in the spleen or fibroblastic cell lines. It could even bind to a human promyelocytic leukemia cell line, when they were differentiated into monocytic cells. On Western blotting, this mAb mainly recognized an approximately 30-kDa band and it was unique because there have been no reports of membrane-associated proteins with a similar molecular mass found in macrophages. These results suggest that there could be a specific gateway molecule to induce G-CSF in macrophages.

PMID: 11073117 [PubMed - indexed for MEDLINE]